REMARKS

The present Response does not amend, add, or cancel any claims. Accordingly, claims 1-10 remain pending for examination. Claims 1 and 10 are independent.

In the Office Action of May 21, 2010, claims 1-3, 5 and 10 were rejected under 35 USC §102(e) as being anticipated by U.S. Patent No. 7,274,363 issued to Ishizuka et al. ("Ishizuka"). Claim 4 was rejected under 35 USC §103(a) as being unpatentable over Ishizuka in view of U.S. Patent Application No. 2002/0030647 to Hack et al. ("Hack). Claims 6 and 7 were rejected under 35 USC §103(a) as being unpatentable over Ishizuka in view of U.S. Patent No. 6,518,962 issued to Kimura et al. ("Kimura"). Claims 8 and 9 were rejected under 35 USC §103(a) as being unpatentable over Ishizuka in view of U.S. Patent No. 6,414,443 issued to Tsuruoka et al. ("Tsuruoka"). These rejections are respectfully traversed.

Claims 1-3, 5, and 10 were rejected under 35 USC §102(e) as being anticipated by Ishizuka. Regarding this rejection, the Office Action alleges that Ishizuka discloses a display apparatus that includes a pixel array including a plurality of pixels that each includes a light emitting unit, a drive element, and a switching element. The display apparatus is further indicated as disclosing a data signal drive circuit for receiving the image data for each frame period and outputting the image signal to the pixel array, a scanning signal drive circuit for outputting a scanning signal to the pixel array, and a current source for outputting the current supplied to the light emitting unit. Additionally, the Office Action indicates that the current source modulates the value or the amount of current being output. Applicants respectfully disagree.

Independent claim 1 defines a display apparatus that comprises:

> a pixel array including a plurality of pixels, each pixel including:
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> a light emitting unit,
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> a drive element for controlling supply of a current to said light emitting unit, and
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> a switching element for controlling said drive element according to an image signal;
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> a data signal drive circuit for receiving image data for each frame period and outputting said image signal to said pixel array based on said image data, said each frame period being provided for displaying one screen of said image data;
>
> a scanning signal drive circuit for outputting a scanning signal to said pixel array, said scanning signal being for controlling a timing at which said switching element receives said image signal; and
>
> a current source for, through said drive element, outputting said current supplied to said light emitting unit;
>
> wherein said current source modulates the value or the amount of said current within said each frame period, said current being output from said current source.

The display apparatus of independent claim 1 includes a pixel array, a data signal drive circuit, a scanning signal drive circuit, and a current source. The pixel array includes a plurality of pixels that each includes a light emitting unit, a drive element for controlling the current supplied to the light emitting unit, and a switching element to control the drive element according to an image signal. The data signal drive circuit receives image data for each frame period and outputs the image signal to the pixel array based on the image data, with each frame period being provided for displaying one screen of the image data. The scanning signal drive circuit outputs a scanning signal to the pixel array for controlling the timing at which the switching element receives the image signal. The current source outputs the current supplied to the light emitting unit through the drive element. According to

independent claim 1, the current source modulates the value, or the amount, of current within each frame period and also outputs the current being supplied.

As discussed in the Specification, pulse width modulation is applied to an input signal for each pixel in order to achieve, for example, a gray scale display. The display synchronous cathode potential control circuit can reduce the cathode side potential of the organic EL elements, thereby increasing the voltage between both electrodes according to the display phase signal. This allows only those pixels with high grayscale values to emit light at high luminance levels, thereby enhancing the peak luminance and visual impact of the display screen. See paragraphs [0085] and [0086] of the Published Application.

The Office Action alleges that Ishizuka discloses all of the features recited in independent claim 1. This does not appear to be the case. Ishizuka discloses a display panel driving device wherein the value of the light emission drive current flowing to each pixel element emits light in succession is measured. The luminance is subsequently corrected for each input pixel data based on the light-emission drive current values. According to Ishizuka, current from the power supply circuit is supplied via a switch when the switch is turned on or via resistor when the switch is turned off. See column 18, lines 34 to 45. A controller is used to control the on-off state of the switch, and the current measuring circuit outputs a voltage that corresponds to the value of the current flowing through the resistor. The controller further executes a leak current canceling routine that measures the current flowing in the display panel when the light-emission drive is ceased in all of the pixel positions. The timing for executing these routines is provided when the power supply of the display apparatus is turned off, when the image data is not being input, or during intervals between one subfield and the next subfield.

In response to Applicants' previously submitted arguments, the Office Action purports to allege that Ishizuka discloses execution of a measurement routine in intervals between subfields, and that such disclosure "would seem to clearly fall" within the broadest reasonable interpretation of the claimed "within said each frame period." Reference is directed to column 19, lines 14 and 15 of Ishizuka. The Office Action goes on to allege that Ishizuka details a measurement routine which modulates the amount of current applied in between sub-fields of a frame. The Office Action concludes that this disclosure is sufficient to teach modulating the current within each frame period, with the current being output from the current source. Applicants note that the Office Action does not provide a citation to the passage where Ishizuka purportedly details the measurement routine which modulates the current being applied in between sub-fields of the frame. Next, the Office Action indicates that Applicants appear to be imparting additional limitations onto the claims which are not present, and that there is no requirement for the current modulation to be performed while image data is supplied to the pixels.

Applicants respectfully disagree, and further submit that the Office Action has (1) misinterpreted the claims and (2) misconstrued the teachings of Ishizuka through application of improper hindsight reconstruction. Independent claim 1 explicitly states that the data signal drive circuit receives image data for each frame period and outputs the image signal to the pixel array based on the image data. Furthermore, each frame period provided for displaying one screen of the image data. Clearly, the frame period corresponds to a period during which image data is being supplied to the pixels. See Fig. 19 and corresponding text. Applicants note that the blanking interval during which the pixels do not emit light, is an optional interval that is not required to practice the invention. Independent claim 1 goes on to

specify that the current source modulates the value, or amount, of current output from the current source within each frame period. Each frame period, however, corresponds to a period where image signals are supplied to the pixel array based on the image data. Thus, it appears that the Office Action has clearly misconstrued the claims in suggesting that there is no requirement for the current modulation to be performed while image data is supplied to the pixels. Independent claim 1 clearly recites this feature, and adequate support is provided in the Specification.

Next, the Office Action alleges that the measurement routine that is executed during intervals between sub-fields clearly falls within the broadest reasonable definition of within said each frame period, and that Ishizuka details the manner in which this measurement routine modulates the amount of current applied in between sub-fields of a frame. At the outset, Applicants note that the Office Action provides no citation as to where the details of this modulation are disclosed. To the contrary, Ishizuka does not appear to provide any discussion of a modulation routine which modulates the amount of current being applied in between sub-fields of a frame.

Modulation of the current applied in between sub-fields of a frame also appears to be inconsistent with the teachings of Ishizuka and predicated on improper hindsight reconstruction. First, the passage cited in the Office Action is completely unrelated to modulation of the value or amount of current within each frame period. Rather, the passage discusses a leak current cancelling routine which measures the current flowing in the display panel when the light-emission drive is ceased in all of the pixel portions. Ishizuka indicates that this routine can be executed when power to the display apparatus is turned off, when image data is not input, or during intervals between one sub-field and a next sub-field. The sub-fields are not intended to be the frame display period, but rather appear to correspond to periods between

frame periods. Ishizuka indicates that the controller places the display panel in a state where the light-emission driving is halted in all of the pixel portions of the display panel (step S41). Specifically, during this period, the controller stops generating the scanning control signal and data control signal. See column 19, lines 16-28 and Fig. 17. Thus, the interpretation of Ishizuka's leak current cancelling routine as a measurement routine which modulates the amount of current being applied during each frame period is clearly inaccurate, and can only be based on inappropriate hindsight reconstruction. Additionally, the interpretation that any modulation of the current being output during each frame period (a period during which data is supplied to the pixels) would be contradictory to the express disclosure that the leak cancellation routine is applied during a period where the controller places the display panel in a state where all of the light emission driving is halted in all of the pixel portions. Ishizuka simply fails to provide any disclosure or suggestion for features recited in independent claim 1, such as:

> wherein said current source modulates the value or the amount of said current within said each frame period, said current being output from said current source.

It is therefore respectfully submitted that independent claim 1 is allowable over the art of record.

Claims 1 to 9 depend from independent claim 1, and are therefore believed allowable for at least the reasons set forth above with respect to independent claim 1. In addition, these claims each introduce novel elements that independently render them patentable over the art of record.

Independent claim 10 defines a method for displaying an image based on image data by using a pixel array that includes a plurality of pixels. Each of the

pixels includes a light emitting unit, a drive element for controlling the supply of current to the light emitting unit, and a switching element for controlling the drive element according to an image signal. The method comprises the steps of:

> outputting said current from a current source to said light emitting unit through said drive element;
>
> receiving said image data for each frame period and outputting said image signal from a data signal drive circuit to said pixel array based on said image data, said each frame period being provided for displaying one screen of said image data;
>
> outputting a scanning signal from a scanning signal drive circuit to said pixel array, said scanning signal being for controlling a timing at which said switching element receives said image signal; and
>
> modulating the value or the amount of said current within said each frame period, said current being output from said current source.

The method of independent claim 10 recites various steps that correspond somewhat to the features recited an independent claim 1. In particular, the method of independent claim 10 requires modulation of the value or amount of current within each frame period, with the current being output from the current source. As previously discussed, such features are not shown or suggested by the art of record.

It is therefore respectfully submitted that independent claim 10 is allowable over the art of record.

For the reasons stated above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a Notice of Allowance is believed in order, and courteously solicited.

If the Examiner believes that there are any matters which can be resolved by way of either a personal or telephone interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

AUTHORIZATION

Applicants request any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 501.43143X00).

Respectfully submitted,
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